



HARVARD
MEDICAL
SCHOOL



Feature

On the Frontlines

Assessing Traumatic Brain Injury Care in Afghanistan

[Continues on page 4](#)

Winter 2011

spaulding *now*

Latest News

A New Hope in Haiti

A collaboration led by Paul Farmer of Partners In Health promises a first of its kind rehabilitation treatment and training center in Haiti.

[Continues on page 6](#)

Resident Profile

A Global Perspective

Dr. Bamidele Adeyemo's road to his residency in PM&R has led him to challenge himself and the quality of care in his native Nigeria.

[Continues on page 6](#)

Focus on Research

Robotic Gait Training

Spaulding researchers partner with the eLEGS robotic exoskeleton developers Berkeley Bionics to help advance the technology that could help patients take their first steps post injury.

[Continues on page 7](#)



Brief Sampling of Presentations

Joanne Borg-Stein, *Platelet Rich Plasma in Young Athletes*, American Academy of Orthopedic Medicine, Las Vegas, NV.

Jonathon Bean, *Physical Activity and the Older Adult*, Annual Meeting AAP, Phoenix, AZ.

Surer E., Kasi P., Cereatti A., **Bonato P.**, Della Croce **U.**, *A Hybrid Markerless Approach for 2D Gait Analysis: Application to Gait of Children with Cerebral Palsy*, XXIIIrd Congress of the International Society of Biomechanics, Brussels (Belgium), July 3-7, 2011.

Brief Sampling of Publications

Zafonte R. Diagnosis and management of sports-related concussion: a 15 year-old athlete with a concussion. *JAMA* 2011 Jul6;306(1):79-86. Epub 2011 May31. (PMID: 21632470)

Tan WH, Goldstein R, Gerrard P, Ryan CM, Niewczyk P, Kowalske K, **Zafonte R**, **Schneider JC.** Outcomes and predictors in Burn Rehabilitation. *J Burn Care Res.* 2011 Sep 21. [Epub ahead of print] (PMID: 21941195)

Suri P, Kiely DK, Leveille SG, Frontera WR, **Bean JF.** Increased trunk extension endurance is associated with meaningful improvement in balance among older adults with mobility problems. *Arch Phys Med Rehabil.* 2011 Jul;92(7):1038-43. Epub 2011 Jun 2.

Carrayopoulos A, **Borg-Stein J**, Sokolof J, **Meleger A and Rosenberg D:** Prolotherapy vs corticosteroid for the treatment of lateral epicondylitis: a randomized controlled trial. *PM&R*, August 2011. Vol 3. 706-716

Johnson DC. Airway mucus function and dysfunction. *N Engl J Med* 2011;364: 978

Nakase-Richardson R, Whyte J, **Giacino JT**, et al. Longitudinal outcome of patients with disordered consciousness in the NIDRR TBI Model Systems Programs. *J Neurotrauma*, Epub ahead of print, 2011, Aug 4.

Giacino J, Fins JJ, Machado A, Schiff N. Central thalamic deep brain stimulation to promote recovery from chronic post-traumatic minimally conscious state: Challenges and opportunities. *Neuromodulation* (in Press).

Naeser MA, Martin PI, Theoret H, Kobayashi M, **Fregni F**, Nicholas M, Tormos JM, Steven MS, Baker EH, Pascual-Leone A. TMS suppression of right pars triangularis, but not pars opercularis, improves naming in aphasia. *Brain Lang.* 2011 Aug 22.

Mendonca ME, Santana MB, Baptista AF, Datta A, Bikson M, **Fregni F**, Araujo CP. Transcranial DC stimulation in fibromyalgia: optimized cortical target supported by high-resolution computational models. *J Pain.* 2011 May;12(5):610-7.

Leslie R. Morse, Supreetha Sudhakar, Valery Danilack, Carlos Tun, Antonio Lazzari, David R. Gagnon, Eric Garshick, Ricardo A. Battaglino. Association between sclerostin and bone density in chronic SCI. *JBMR.* (In Press).

Hirschberg R, Giacino JT. The Vegetative and Minimally Conscious States: Diagnosis, Prognosis and Treatment. In: Young GB, editor. *Neurologic Clinics*. Philadelphia: Elsevier. (in Press).

For a full listing visit <http://pmr.hms.harvard.edu>

From the Chair

A year in REVIEW

A Message from Ross Zafonte, DO



Ali Aujali, Libyan Ambassador to the United States

Colleagues,

The end of the year brings a chance to review and reflect on the accomplishments preceding and challenges ahead. Certainly for our department the year ended with a flurry of activity, much of it we have featured in this issue.

I had the personal honor this past August as part of my work with the Massachusetts General Hospital/Red Sox Foundation Home Base Program to join John Parrish, MD, and General Fred Franks (ret), as we accompanied General Peter Chiarelli, Vice Chief of Staff of the US Army on a visit to Afghanistan. The purpose of our visit was to learn and share information on TBI and battlefield concussions. I cannot adequately express the quality of character and dedication to duty of these brave heroes. The visit further strengthened our resolve to do whatever is possible to deliver the highest level of care they all rightly deserve.

On the research front, we have had several exciting developments. First our hospital, under the direction of Dr. Paolo Bonato, was one of the only sites in the nation to host Berkeley Bionics' eLEGS technology. The technology will be incorporated full time into our treatment programs in early 2012. In addition, Spaulding was selected by NIDRR to receive a 5-year Spinal Cord Injury Model Systems Grant with Dr. Leslie Morse serving as program director.

Finally, Spaulding was chosen by the Libyan National Transitional Government in concert with the State Department to be the first US hospital to deliver on a promise by Secretary Clinton to support and treat the war wounded of Libya. This work is ongoing and has been a large collective effort by all of our clinicians and support staff to provide the urgent rehabilitative care that these patients need.

Certainly 2012 will hold new opportunities for those of us in the rehabilitative field both in care and science. I have more confidence than ever that our collective talents are ready to find novel solutions in education, care and research to make the lives of those in need better around the world. ■

Ross Zafonte, DO

Professor and Chairman of Physical Medicine and Rehabilitation
Vice-President, Medical Affairs, Research, and Education

Research



Spaulding Selected by NIDRR as an SCI Model System Site

SPAULDING REHABILITATION HOSPITAL'S Spinal Cord Injury Program has been selected as a Spinal Cord Injury Model System site by the National Institute on Disability and Rehabilitation Research (NIDRR). The grants are awarded in five year cycles by NIDRR through an extremely selective process with only 14 national sites. NIDRR awards SCI Model Systems grants to institutions that are national leaders in medical research and patient care. Each site provides the highest level of comprehensive specialty services, from the point of injury through rehabilitation and community reentry. Dr. Leslie Morse will serve as Program Director and Dr. Ross Zafonte will serve as Administrative Co-Director.

"Being selected by NIDRR as an SCI Model System site is a tremendous achievement and recognition for Spaulding and the Harvard Medical School Department of Physical Medicine and Rehabilitation. This grant will enable us to effectively harness the convergence of science and medicine that Spaulding can provide to push our understanding of the biology of recovery and improve the lives of people with spinal cord injuries," said Dr. Ross Zafonte, VP of Medical Affairs, Research, and Education, Spaulding Rehabilitation Network and Chairman of the Harvard Medical School Department of PM&R at Spaulding.

This funding will allow Spaulding clinicians and researchers to improve both regional and national understanding of SCI treatment models. Each SCI Model Systems site contributes to the national SCI Model Systems Database for a better understanding of long-term health outcomes. Spaulding will also expand its participation in collaborative research and expand education and outreach efforts to inform individuals with SCI, their families and care givers, health care professionals and the general public about its work. ■

Research

Spaulding Team Coverage Program

AS CONCUSSION and sports injury awareness increases at all levels of sports, the need for qualified clinicians to provide coverage and advisement to teams has increased. Members of the Department have taken a proactive role to establish relationships with professional and amateur teams. Massachusetts area high schools,



as well as Division II and III Colleges that often get overlooked are part of the Spaulding Team Coverage (STC) program.

Erik Brand, MD MSc as part of his Sports Medicine Fellowship, serves in the program and works closely with the Department faculty. Erik also has a passion for rowing and has been involved in international events such as the Head of the Charles Regatta and the World Rowing Championships in London. The STC Program provides both on field coverage and frequent in clinic visits for athletes with various musculoskeletal and neurologic conditions as well as providing guidance on management and return to play.

Department faculty members that are part of STC include Dr. Joanne Borg-Stein and Dr. Kelly McInnis, who serve as a consultant for the Patriots, Revolution, Bruins and Red Sox. In addition, Dr. David Crandell serves as team physician for the US National Amputee Sled Hockey team and Dr. Laura Elson provides coverage for specialty sports such as ultra marathons and dance teams. ■

On the Frontlines

Assessing Traumatic Brain Injury Care in Afghanistan

EXITING THE C4 TRANSPORT PLANE, it quickly became evident to the visiting group of physicians from the Mass General/ Red Sox Home Base Program that the otherworldly landscape of Afghanistan was just the start of a unique and transformative experience. Home Base Senior Advisor General Fred Franks (ret), Dr. Ross Zafonte, TBI Research Program Leader and Dr. John Parrish, Executive Director accompanied General Peter Chiarelli, Vice Chief of Staff of the US Army and his team to Afghanistan. General Franks has believed for some time that it was important for clinical leaders at Home Base to see first-hand the extraordinary commitment the military has made to identifying and treating the “invisible wounds of war—PTSD and TBI”—in theatre.

“Under General Chiarelli’s leadership, the Army is doing everything within its power to aggressively address these invisible wounds of war. The experience was extremely helpful to us in looking for novel approaches to TBI. We learned something from everyone we met, caregivers and service members alike,” said Dr. Zafonte.

The group visited four Afghanistan bases stopping to see the Army’s Restoration and Recovery Centers at each base. From sophisticated facilities to unassuming tents for rest and relaxation (R&R), the Army is working to build a new culture of concussion awareness. Soldiers who have been knocked unconscious are screened for TBI, then spend a few days recovering and rebuilding from their concussion. The R&R facilities are safe, quiet, dimly lit, and there are caregivers to talk with about one’s experience.

One caregiver the group spoke to referred to the concussions his fellow soldiers receive as “brain sprains.” “If you sprain your ankle, you get off it for a few days, to give it time to rest and heal. We have the same approach for concussions,” he said.

In addition to care, the military has made significant investments to educate our troops about the invisible wounds, and to reduce the stigma of seeking care. Service members are repeatedly told that combat stress symptoms are a normal reaction to abnormal circumstances and the responsible thing to do is get help. These overall efforts also extend to the military reaching out to the clinicians and researchers in both public and private care to ensure they can continue to provide support to soldiers from the front lines and the transition back to their civilian lives and beyond.

“As the Defense Department continues its dramatic draw down from Iraq and Afghanistan, we need to recognize that the invisible wounds of war are very real, and will be with our young service members and their families for a long time to come. We owe it to these brave heroes to ensure we are doing everything possible to support them. It is imperative that we create the collaborative partnerships to ensure a strong health safety net for our returning veterans and their families for the long term,” said Dr. Zafonte. ■





Picture Caption (L-R) Lori Mathews, (PIH), Dr. Koji Nakashima (PIH), Dr. Gilbert Mudge (Partners HealthCare), Paul Farmer, (PIH), David Storto (SRN), Ulrike Berzau (SRN), Oz Mondejar (SRN), Dr. Andree LeRoy (SRN)

» Rebuilding Haiti

UNVEILING PLANS for a new rehabilitation and training center in St. Marc, Haiti, Paul Farmer, Partners In Health co-founder and chair of the Department of Global Health and Social Medicine at Harvard Medical School, called the project the “fruit of the partnership model” from which Partners In Health takes its name.

The project is a collaboration between Partners In Health, Partners HealthCare, Spaulding Rehabilitation Network, and Shepley Bulfinch architects.

Plans for the new facility, show a two-story building wrapped by a ramp that provides second-floor access and is cooled using natural ventilation. The 6,700 square foot building is designed to be earthquake and hurricane resistant.

The impact of the new facility will reach far beyond the hospital grounds and the city of St. Marc: as Haiti’s first universally accessible rehabilitation facility in the Ministry of Health system, it will establish new national standards for rehabilitative care.

Spaulding, led by Dr. Andree LeRoy, is developing a nine-month program to train paraprofessional healthcare staff at the center with a curriculum that builds on materials developed by Health Volunteers Overseas.

“We intend to create a new cadre of healthcare professionals,” said Dr. Farmer.

Speaking to the transformative impact of rehabilitation on the lives of Haitians with disabilities enabling them to engage more wholly in society, Dr. Koji Nakashima of Partners In Health said, “It’s not enough to save lives, it’s important to save livelihoods.”

The hospital in St. Marc has a projected completion date in March 2012. The center’s education and training program will begin housed in temporary quarters until the facility opens. ■

Resident Profile Bamidele Adeyemo

DR. BAMIDELE ADEYEMO’S road to medicine started early in life when he experienced the passing of a close family member. He decided to volunteer in hospitals as a young child to help those families experiencing similar difficulties due to chronic illness. Those transformative early years instilled in him a deep desire to pursue a career in medicine. Upon discovering the discipline of PM&R, Dr. Adeyemo realized the great impact he could have in his native Nigeria.

While living in Nigeria, he had witnessed a society where those with disabilities lived on the fringes or were often discarded. Medicine and treatment were commonly inaccessible for this population and there were deep cultural misconceptions of persons with disabilities. While Nigeria’s economy is growing, it still is not at a point to adequately provide the support services for the seventh most populous country in the world. Dr. Adeyemo recognized the need to gather resources to set out establishing a healthcare system that could support the population with disabilities in Nigeria and other developing nations.

While still a student at the University of Wisconsin Medical School, Dr. Adeyemo coordinated research with consultants on disability healthcare from the World Health Organization and created a network of multi-disciplinary clinicians. With this group of impassioned individuals, he co-founded a non-governmental organization aimed towards the establishment of a grass-roots healthcare system in Nigeria.

Dr. Adeyemo has carried the same energy and focus to his residency at Harvard Medical School’s Physical Medicine and Rehabilitation program at Spaulding. He works to advance both his advocacy and clinical interests, becoming involved in research on revolutionary noninvasive neuro-modulation techniques to effectuate neuro-recovery in the stroke population.

With humility, Dr. Adeyemo has become a leader to his peers as well, serving as a national mentor for the American Academy of Physical Medicine & Rehabilitation Mentorship Program. He also recently was selected as just one of 17 residents nationwide to serve on a panel to address leading policy makers on the changing healthcare environment both in the U.S. and abroad.

His passion towards education, life-long advocacy for the chronically ill, international scope, and goal to improve the healthcare system for all individuals, makes Dr. Adeyemo a young leader for both the Spaulding Community and the field of PM&R. ■

eLEGS Robotics Technology



SEVEN YEARS AGO, David Leone learned to navigate the world after a severe spinal cord injury rendered him paralyzed from the waist down. In the time since his injury he has had a child, returned to work and found activities like hand cycling to best regain the active lifestyle he once had. While hopeful for medical innovations, he also accepted his spinal cord injury. However a new breakthrough technology created by Berkeley Bionics called “eLEGS,” a wearable robotic exoskeleton, enabled him to stand and take his first steps in seven years as part of an investigational study at Spaulding.

Berkeley Bionics and Spaulding partnered through Spaulding’s Motion Analysis Lab under the leadership of Dr. Paolo Bonato, to have a one week test this past September, involving 6 patients, to test and define clinical protocols for the new device.

“Introducing novel approaches is what the clinicians and researchers at Spaulding are always striving for. To be able to give people new avenues of independence can be life altering and seeing people this week take their first steps in many years is very powerful,” said Dr. Ross Zafonte.

Named by *Time* magazine and CNN as one of the top innovations of the year, eLEGS is a ready-to-wear, battery-powered exoskeleton that is strapped over the user’s clothing. The user initiates the steps by triggering non-invasive movement sensors in the crutches that communicate with the computer carried in the backpack. The user doesn’t bear the weight of the device as it transfers its load directly to the ground. The device can be adjusted to fit most people weighing 220 pounds or less, and between 5’2”and 6’2”, with at least partial upper body strength.

“Many of the 6 million Americans who live with some form of paralysis today were highly active when they sustained their injury. With eLEGS, they can stand up and walk for the first time since their injury. We are on the verge of a new era of mobility for people with paralysis, using bionic exoskeletons,” said Eythor Bender, Berkeley Bionics’ CEO.

Berkeley Bionics has partnered with ten of the top rehabilitation facilities nationwide including Spaulding as part of this testing phase. Spaulding will become one of the first eLEGS Centers in the world when it incorporates the technology as part of therapy programs in early 2012. ■





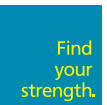
SPAULDINGTM
REHABILITATION NETWORK

Spaulding Rehabilitation Network
125 Nashua Street Suite 1003
Boston, MA 02114

NON-PROFIT ORG
U.S. POSTAGE PAID
BOSTON, MA
PERMIT NO.54302



FOUNDED BY BRIGHAM AND WOMEN'S HOSPITAL
AND MASSACHUSETTS GENERAL HOSPITAL



Spaulding is once again ranked by *US News and World Reports Best Hospitals* at #5 in 2011.

spaulding *now*

In Pictures



The Stanley Cup and Andrew Ference visit Spaulding Hospital

WHEN THE BRUINS ended their long 39-year drought this past June winning the Stanley Cup, every corner of New England rejoiced. Defenseman Andrew Ference has been part of many visits

to Spaulding and developed a strong connection to the people and patients he met. When his day with the Stanley Cup came he knew Spaulding would be on his list to visit. So on a sunny Labor Day

holiday, pulling up to the hospital on his bike with the Stanley Cup in tow, Ference delivered on a promise to the hundreds of patients and staff assembled, giving them a day they would never forget. ■

Discover more: <http://pmr.hms.harvard.edu>

Follow us on:

